Proposed Revisions to the MCP Numerical Standards

Affected Standards	Proposal	Affect on Numbers
	Adding New Chemicals Adding new chemicals to the list of Method 1 Standards, Upper Concentration Limits, and/or Reportable Concentrations Up to 10 chemicals may be added to the list of standards. Exact number will be determined by BWSC, based on need. Asbestos, HMX, RDX and 1,4-dioxane are likely. Others have been proposed. [Simplifying Process, Increasing Consistency]	New Standards
All	**Toxicity Information Update** Routine update of chemical-specific toxicity information and physical constants. US EPA and other data sources are reviewed for updates to the information used by MA DEP to calculate the standards. [Updating Science]	Most chemicals will be unaffected. A few standards could go up or down, depending on the specific chemical.
All	**Clarification/Correction of Text** Changes to the text of Subpart C (Notification) and Subpart I (Risk Characterization). Correct inadvertent deletions by SoS's Office and/or DEP from last round of regulation revisions. Clarify other sections (example: "within a depth of 12 inches, but as close to the surface as possible") [Simplifying Process, Increasing Consistency, Correction]	No changes to the numerical standards.

Affected Standards	Proposal	Affect on Numbers
Groundwater		
GW-1	**Dermal & Inhalation Exposure** The Critical Exposure Pathway regulations focus attention on the dermal and inhalation exposures associated with drinking water, which are significant for many chemicals. These exposures are not (yet) considered in setting MCLs. For chemicals without published Massachusetts MCLs or ORS Guidelines, the GW-1 standard would incorporate quantitatively the inhalation & dermal contact exposures. [Updating Science, Simplifying Process, Increasing Consistency (+/-)]	No change expected for most (75%) chemicals, including the commonly reported VOCs. The calculated GW-1 standard would be decreased for approximately 21% of the chemicals. The typical decrease is approximately 33% of the standard (e.g., 30 µg/L to 20 µg/L)
GW-2	**Volatilization to Indoor Air** The standard volatilization model may overestimate indoor air concentrations of petroleum hydrocarbons and underestimate concentrations of chlorinated hydrocarbons. Chemical-specific modeling is proposed, rather than applying a generic dilution attenuation factor. Additional adjustment factors for petroleum hydrocarbons are being considered based upon field data submitted to DEP indicating the current standards are overly conservative. [Updating Science, Correction]	Some (33%) of the GW-2 standards would change. Standards could go up (11%) or down (22%), depending upon chemical-specific factors. Standards for chlorinated hydrocarbons will tend to go down, although it is not universal.
GW-3	**Protection of Surface Water Quality** Basing the standards on Ambient Water Quality Criteria and EPA LOAELs does not cover all chemicals. Default values used for other chemicals- these may not be sufficiently protective. Adjust for Massachusetts-specific hardness, replace default values with chemical-specific values calculated using AQUIRE values, Tier II values and other published benchmarks. [Updating Science, Increasing Consistency, Correction]	A majority (67%) of GW-3 standards would change. While the change for any given chemical could be up or down, more standards will be lowered (52%) as higher default values are replaced with chemical-specific values.

Affected Standards	Proposal	Affect on Numbers
Soil		
All	**Simplifying Calculations** 1993 standards were based on exposures calculated on a year-by-year basis normalized to body weight. While more arguably more accurate, it is more difficult to describe in narrative, explain to the public, or to modify on a case-by-case basis. Adopt the US EPA approach, which averages exposures over specific time periods during a receptor's life. Equations are simplified (at most 3 time periods, rather than 30) and exposures are easily described. [Simplifying Process, Increasing Consistency]	No significant changes to the numerical values.
All	**Dermal Adherence of Soil** 1993 standards incorporated a Dermal Adherence Factor which is an estimate of how much contaminated soil is in contact with the skin, and thus available for absorption. Incorporate recent studies that looked specifically at soil adhering to the skin after certain activities. Apply this factor to the Method 1 standards and publish guidance for use of these factors under Method 3. [Updating Science, Increasing Consistency]	Up to 46% of the Method 2 Direct Contact Standards (Table 5) will increase. Somewhat fewer Method 1 Standards will go up due to the influence of the leaching pathway.
S-1	**Vegetable Gardening** For residential sites, the public often questions the protectiveness of the S-1 standards for gardening. The standards do not specifically incorporate this pathway, but it can be quantitatively evaluated under Method 3. Review Plant Uptake and gardening exposure information published since 1993. Evaluate the ability for DEP to quantitatively address this exposure. Decide whether to incorporate the pathway into S-1 standards. If not, recommend the pathway <u>not</u> be addressed under Method 3. [Updating Science, Increasing Consistency]	At most a handful of chemicals (metals, PAHs) would be affected. If implemented, the change would likely lower the numerical standards by perhaps a factor of 2 or more.
S-2/S-3	**Subchronic Noncancer Exposures** Under certain specific circumstances, the risk-based standards for the S-3-type (construction/excavation) exposures are more stringent than for the S-2-type (commercial) exposures. When the calculated S-3 standard is lower than the calculated S-2 standard, the S-2 standard is set equal to the S-3 standard.	Approximately 30% of the Method 2 Direct Contact S-2 standards could be lower (more stringent) by a factor of approximately 2 to 5. Fewer Method 1 Standards would be affected due to the influence of the leaching pathway.

Affected Standards	Proposal	Affect on Numbers
All	**Soil Ceiling Levels** The soil ceiling levels are upper limits on how high the generic Method 1 standards can be set. In some cases, the calculated risk-based standards may be higher than the saturation point of a chemical in soil. In other words, the standard is set at a concentration at which the chemical may exist as pure product, rather than adsorbed onto the soil. The Soil Ceiling Levels will be adjusted to include a chemical's soil saturation level (C_{sat}).	Approximately 10 S-1, 13 S-2, and 18 S-3 Method 2 Direct Contact Soil Standards are affected. Fewer Method 1 Standards would be affected due to the influence of the leaching pathway.
All	**Volatilization from Soil to Indoor Air** Volatile contaminants in soil may volatilize into indoor, resulting exposures. In theory, such sites cannot be evaluated by Method 1, but this pathway is rarely evaluated. Methanol preservation of soil samples now provides better data for volatile organics in soil, raising the profile of this problem. Evaluate the problem of volatilization from soil to indoor air. Consider various approaches, including (a) incorporation of pathway into all the soil standards, (b) adding specificity to the applicability of the Method 1 standards (Example: limit use of standards to soils less than a specific level of Total VOCs). [Simplifying Process, Increasing Consistency]	Preferred approach would result in no change to the numerical standards.
All	**Leaching to Groundwater** A review of the leaching model used to develop the soil standards revealed both errors in implementation and limitations in its application. As a result, many of the leaching-based standards are unreliably protective of groundwater. Conduct chemical-specific modeling of the leaching pathway. Update the approach to incorporate Monte Carlo distributions of many parameters, using actual site data from Massachusetts sites. [Updating Science, Correction]	Using the calculated 85th percentile value for the DAF, the proposed values are approximately a factor of 10 more stringent than the DAFs calculated according to the 1993 methodology. Updated physical constants may also result in changes to a specific standard. DAFs are only calculated for approximately 50% of the chemicals. Not all of these soil standards will be driven by the leaching pathway.